

DOCUMENT RESUME

ED 331 815

SP 033 046

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TITLE The Chevron ENCORE Midcareer Program and the Mid-life Career Change to Teaching Science and Mathematics Study.
PUB DATE 91
NOTE 11p.; Paper presented at the Annual Meeting of the American Educational Research Association (Chicago, IL, April 3-7, 1991).
PUB TYPE Speeches/Conference Papers (150)
EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Alternative Teacher Certification; *Career Change; Elementary Secondary Education; Higher Education; Mathematics Teachers; *Midlife Transitions; Nontraditional Students; Science Teachers; Teacher Education; Teacher Shortage
IDENTIFIERS San Francisco State University CA

ABSTRACT

In 1986, responding to the nation's teacher shortage, especially in the fields of mathematics and science, Chevron USA funded the ENCORE Program to facilitate the entrance of nontraditional recruits into the profession with alternative credentialing. Chevron also funded this study of mid-life career change to teaching in order to enable policymakers and educators to know: (1) if mid-life career changers are really viable candidates to fill vacant teaching positions; and (2) if specialized programs are having an impact on teacher quality and quantity. The study was conducted over a period of one year with 18 ENCORE recruits as subjects. The conclusions were that retraining programs are not going to solve the problems of teacher shortages because they are costly and do not train nearly enough teachers to fill the empty teaching slots. Also, the career transition seems to be too hard and the status and pay of teaching too low to make teaching an attractive second career alternative. Recommendations are made for further study as to why people enter, stay in, and leave teaching. (LL)

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As part of the Symposium on
Alternate Routes into the Teaching Profession in California

**The Chevron ENCORE Midcareer Program
and
The Mid-Life Career Change to
Teaching Science and Mathematics Study**

Paper presented at the 1991 Annual Meeting
American Educational Research Association
Chicago, Illinois

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The Chevron ENCORE Midcareer Program for Teaching Science and Mathematics

THE CHEVRON ENCORE PROGRAM

Background

In response to the nation's well-documented shortage of teachers, especially in the fields of mathematics and science, numerous attempts have been made to attract and facilitate the entrance of nontraditional recruits into the profession (Adelman, 1986; Carey, Mittman, Darling-Hammond, 1988; California Roundtable, 1985). Sizeable investments have been made in alternative credentialing programs serving this new pool of labor.

In 1986 Chevron USA funded the ENCORE Program at three institutions of higher education and an exciting model of a collaborative business-education partnership was established. The project was initiated when leaders at Chevron recognized that the critical shortage of mathematics and science teachers in our nation's schools coincided with the surplus of professionals with these backgrounds within their own organization. Working with teacher educators at San Francisco State University, the University of Houston, and the University of New Orleans they conceived the idea of providing an opportunity for experienced business and industry professionals to use their content expertise in our nation's classrooms in a rewarding second career. These ENCORE Programs have since become models for similar career transition teacher preparation programs.

The ENCORE Program at San Francisco State University

The philosophy of the ENCORE program at San Francisco State University reflected the policy statement on *Alternative Preparation for Licensure* recently issued by the American Association of Colleges for Teacher Education (AACTE, 1989). All ENCORE participants met the standard requirements mandated by the State and by the University for teacher credential candidates.

A special curriculum, however, was designed to provide all of the program requirements leading to the award of a Clear California Single Subject Credential while keeping in mind the unique characteristics of the participants. The entire three semester program was focused on providing a maximum level of support for the participants through the availability and assistance of a faculty member who served as the program coordinator and through the careful structure of the experiences the students would have.

To ease the transition back to student life, during the initial semester participants only needed to be on campus two days per week. In order to foster a natural support group, ENCORE students enrolled in credential required courses as a group. During their first semester ENCORE students took eleven units of graduate work--Mainstreaming, Reading for Secondary Teachers, Special Topics in Secondary Education, and Curriculum and Instruction for Math and Science Teachers. Individual students also enrolled in additional content courses needed to meet subject area requirements.

During this first semester, one class exclusively for ENCORE students (Special Topics in Secondary Education) featured guest lecturers from both the School of Education and local school districts. Here issues pertinent to the preparation of secondary school teachers were discussed and opportunities to practice and analyze the methodologies to be learned were provided through the use of video-taped micro-teaching experiences. One morning per week the group took field trips to various school and educational resource sites. These visits introduced the participants to urban and suburban schools, high schools and middle schools, comprehensive and specialized schools, and large and small sites. By talking with administrators, teachers, and students the participants were able to form their own impressions about the variety of school settings in the immediate area. Observing in science and mathematics classrooms allowed the prospective teachers to see what classrooms are really like and how teachers handle instruction, management, and discipline. The specially arranged trips to science museums provided the future teachers with an understanding of support services which are available to classroom teachers in the form of materials, people, and sites for field trips.

Through the Curriculum and Instruction course the participants learned of the State Frameworks and Curriculum Guides in mathematics and science, textbook selection procedures and other factors which help to define the content of secondary school courses. This specialized course was initially designed to accommodate the unique ability of the ENCORE participant to teach either mathematics or science; it was later opened to non-ENCORE students. The instructors represented expertise in both science and mathematics education and the focus of the course was to prepare students to work effectively within both fields. Class members were required to develop and present entire unit plans and several individual lesson plans meeting specific guidelines. Designing safe and effective laboratory experiments, gathering and sharing resources, and learning about alternative teaching strategies were key components of the semester. Through the cooperative learning group activities, ENCORE members formed significant relationships with other future math and science teachers.

In addition to attending classes the participants completed the State mandated *Early Field Experience Requirement* of 45 hours as an instructional aide in a classroom setting. They acted as volunteer tutors in science and mathematics classrooms at both the middle and high school levels. During this portion of the program, they worked with remedial, average, and special education students in group and individualized settings.

During the summer, specialized tutoring was provided to the participants so they could prepare for the National Teachers Examination in Mathematics. All of the ENCORE students passed the examination and thus became qualified for admission to the credential program as candidates in Mathematics. Students also participated in elective courses in content areas and as "special" students in summer workshops for experienced science teachers.

In the 1987-88 academic year, students enrolled as a group in the regular credentialing courses and continued to receive guidance, counseling, and assistance from the ENCORE coordinator. Placements for the observation and participation portions of the year were under the direction of the coordinator who also provided additional supervision during the student teaching semester.

Adaptations

Although no longer an official program, ENCORE continues to serve as a model transition program for several similar projects. Using ENCORE as both a model and a resource, the California State University System was funded by the National Science Foundation to establish a program to train former business and industry professionals as teachers of math and science in urban middle

schools. San Diego State University was awarded a FIPSIE grant to replicate the ENCORE project for soon-to-retire military personnel in its service area. ENCORE also provided a model for the four National Executive Service Corps programs established through a Carnegie Foundation grant.

Based upon what was learned from the ENCORE program and its follow-up study (Madfes & Schwartz, 1989; Madfes, 1989), adaptations were institutionalized at San Francisco State University. Evening courses are offered to provide counseling and information to currently employed professionals who are interested in making teaching their second career. Major San Francisco-Bay Area corporations have also contracted modules of the *Introduction to Teaching* course for employees soon to be affected by industry downsizing.

THE MID-LIFE CAREER CHANGE TO TEACHING SCIENCE AND MATHEMATICS STUDY

Background

Credible studies, using survey techniques, have been published on the operational aspects of programs such as ENCORE (Carey, et. al., 1988; Adelman, 1986). There is little data, however, on how second career students have made the transition to student and then to teacher or how they perform and adjust to their roles as teachers. Policymakers and educators need to know: (1) if mid-career changers are really viable candidates to fill the vacant teaching positions that exist in our nation's schools; and (2) if specialized programs for mid-career changers are having an impact on the teacher quality and quantity issues that led to their development. Responding to the need for such data, Chevron USA funded the Mid-Life Career Change to Teaching Study.

Description of the Study

In order to assess whether the large labor pool composed of "early retirees" and other career transition individuals is tenacious enough and able enough to help fill the predicted teaching shortages in science and mathematics for the 1990's and beyond, a set of questions about second-career teachers was formulated (Madfes and Schwartz, 1989). The researchers attempted to answer these and other questions for a select group of second-career teachers during the induction year of teaching. The focus group was composed of those who had been recruited for the ENCORE programs. Two comparison groups of first year teachers--traditional first-career and second-career teachers not in the special program--were also studied. Ethnographic research techniques (key informant interviews and classroom observations) as well as analysis of journals, and surveys were employed to gather several types of data.

Due to the small size of the sample (18), generalizations to all second-career teachers can only be suggested at best. The richness of the data, the frequency of contacts with the participants, and the triangulation of data sources, however, provide a number of provocative insights. A summary of answers to the original proposal questions follows.

Summary of Findings

Do participants stay with the program?

Dropout rates for second-career teacher credential candidates appear to be consistent with those of traditional credential candidates (Heyns, 1988). The participants in the ENCORE Teacher Preparation Programs had a dropout rate of 33% (n=27, dropouts=9) which was attributed to both the short decision-making time provided for the potential candidates prior to beginning the program and the alternative career possibilities available to a highly specialized group of professionals. Money was also a factor in retention during the program and on the job. Those who had supplemental incomes, either through early retirement pensions or family support, were more likely to complete the preparation program and to stay in teaching.

Do second-career teachers obtain jobs?

Yes. Data obtained from all three institutions indicated that all of those who had completed certification requirements were hired in full-time teaching assignments. At all three sites, ENCORE participants were offered teaching jobs prior to obtaining certification. Emergency or specialized alternative certification procedures would have allowed these people to teach prior to completion of a teacher preparation program. Only one participant availed himself of this opportunity. He did not return to teaching the following year however and expressed what he termed "burnout due to not being fully prepared."

How are second-career teachers doing on the job? How do they compare to other neophyte teachers?

Self-reports and classroom observations indicate a wide variety of concerns, strengths, and weaknesses. The second-career and ENCORE individuals in this study appeared to be doing as well as other first year teachers and in some cases much better. Adjustment did not seem to differ for this group of novices as compared to other beginning teachers although ENCORE participants had a difficult time with the increased autonomy of the classroom and with the absence of direct feedback on performance.

Are second-career teachers using their prior professional experiences in the classroom?

All participants who had prior work experiences reported that they used organizational and clerical skills from previous employment settings in their work as a teacher. Only three participants were able to provide examples, however, of using their prior professional experiences in the content of instruction. It would seem that the ability to utilize examples and materials from prior professional experiences may develop over time. These teachers who are novices are learning the cultures of the school, the norms of the classroom, the behaviors of teaching, and the content of the curriculum simultaneously. Once the rules of the culture and the structure and content of the curriculum are understood, the teachers may be better able to connect the course content to their own prior experiences and thus make their instructional delivery more exciting and relevant for students. Additional observations with a larger sample of individuals need to be made to better answer this question.

How are second-career teachers viewed by their new colleagues and students?

The ENCORE and second-career individuals were viewed by their new colleagues as "new to the building" and not necessarily as "new to the profession." This assumption made by the more experienced teachers was due to the age and aura of maturity of the individuals. In most cases this false assumption was detrimental because the new teachers were not offered the same

degree of assistance and guidance as are usually provided to younger beginning teachers. The absence of this informal induction process in conjunction with the virtual lack of formal induction programs made adjustment more difficult than it needed to be. Observations revealed that students treated the older novice teachers with more respect than they accorded younger teachers.

Are second-career teachers happy in their new careers?

Most of the teachers interviewed in this study stated that they were happier in teaching and felt more fulfillment through their work than they had in previous work settings. This positive attitude was related seemingly more to the age of the interviewee, however, than to preparation program or to prior career experience. The three oldest participants (two ENCORE and one second-career) did not return to teaching for a second year and had not reported being happier in teaching than in previous occupations.

Will they remain in teaching long enough to make a contribution?

This study focused only on the first year of teaching. At the end of the induction year four of the six ENCORE participants returned to teaching. Two other participants (one second-career and one first-career) indicated that they would not be returning to the classroom. The two ENCORE participants who did not return, left their classrooms before the end of the first teaching year. This attrition rate, however, does not seem to be much different than that for all beginning teachers (Heyns, 1988). Further follow-up is needed in the form of a long-range study of the same participants.

What else was learned?

The adjustment factors and working conditions which this study focused on seemed to be similar for all three types of project participants--whether they were first- or second-career, graduates of ENCORE or of traditional preparation programs. The required amount of non-teaching time that was devoted to work related activities was a significant part of the novices' daily lives. The ability to use one's work time for personal needs, e.g. getting a cup of coffee, going to the bathroom, making a phone call, was mentioned as another significant negative adjustment factor. These differences appear to be consistent with other studies of the working conditions of teachers and the induction year of second-career individuals (Eddy, 1976; Schwartz & Olson, 1987; Darling-Hammond et al., 1989; Madfes, 1990).

Data collected on specialized teacher-education programs seem to also confirm our findings. The programs studied in the 1989 RAND report (Darling-Hammond et al., 1989) appeared to be at least as successful as more traditional programs in preparing teachers for the classroom.

However, given the later career choice that many of these new recruits have made, and the time and energy that many have devoted to training for this new career, one might expect an even higher level of planned retention. It seems, however, that it is the difficult nature of teaching itself that is largely responsible for most new recruits' considerations of leaving teaching. Working conditions feature heavily in expressed dissatisfaction, especially schools' apparent emphasis on paperwork, and nonteaching activities at the expense of teaching time (p. 100).

Recommendations

Personal support

Teacher preparation programs need to provide personal support to older students who have less tolerance for bureaucracy than they did as undergraduates. These people have less patience for standing in line and being treated as "a number." The assistance of an ENCORE Coordinator made a positive difference in the on-campus experiences of the ENCORE students at all three sites. It is recommended that programs provide fiscal and special support services as well as built-in ceremonies, rites, and rituals to ease the transition from worker to student to teacher.

Increased exposure to adolescents

More direct exposure to adolescents and more work in the area of adolescent psychology must be provided for older credential candidates. This is especially important for those who may be parents and who may be less able to separate themselves from what they remember about school from their own experiences or through the experiences of their own children. A more reality-based approach is required for the older student who may be more idealistic and altruistic than the more traditional credential candidate. It is recommended, therefore, that early exposure to groups of adolescents, perhaps in a summer-bridge program or a math camp, be provided for the non-traditional student along with information and theory about adolescent development.

Classroom management

Preparation programs must provide increased opportunities for learning and practicing various student management techniques. Group management seemed most difficult for those novice teachers who were parents and used to dealing one-on-one with adolescents. The results of this study seem to be in accord with the findings of the RAND study where many new math and science teachers indicated that they could have been better prepared to handle classroom management and student discipline than they were (Darling-Hammond et al., 1989). Though actual experience is necessary in developing this type of skill, better preservice training could ease the transition. It is recommended, therefore, that work in group process, conflict reduction, communication skills, use of the curriculum as a positive management tool, and other such areas be built into all aspects of the preparation program.

Induction year support

Through work with others, teachers shape their perspectives on their daily work and revise or confirm their assessments of their career choices (Little, 1987). Teacher education institutions need to work closely with schools and school districts where graduates find employment to encourage induction year support for all new teachers regardless of the numbers of novices or the ages of the novices. Older beginning teachers were often considered "new to the school," not "new to teaching." Outreach is critical for the older person who may appear to be confident and competent, but who is really in need of guidance and support. These people often do not ask for help because they do not feel it is available and because they do not want to appear "in need." It is recommended, therefore, that preparation programs inform school sites concerning the status of their second-career participants and assist the schools in establishing support networks for these new teachers.

Analysis of the age-factor

Researchers need to explore the question of the age variable for those who might consider teaching as a second career option. Although legally there cannot be a maximum age for accepting credential candidates, perhaps there is an age factor which contributes to both the teaching effectiveness and the perceived stress level of the individual. Is it age or simply what age represents? Do older novice teachers perceive more stress and dissatisfaction due to the physiological characteristics of age or due to the experiences which they have encountered prior to entering teaching?

Studies on the barriers to teaching provide much data to support the notion that schools tend to be "dehumanizing" (Schwartz et al., 1987). Schools tend not to treat teachers as adults and professionals. They tend not to provide adequate resources so that teachers can do their jobs and certainly they tend to provide little respect for the capabilities of the teacher. Second-career individuals know what "the real world" is like and many times have other viable career options, so they leave teaching quickly. Research in the area of the meaning of work as found in teaching is beginning to shed some light on why second-career people enter, stay, and leave the field of teaching (Madfes, 1990). It is recommended, therefore, that questions concerning the age variable and questions on the meaning of work as found in teaching be pursued to better inform potential recruits to the profession, to assist in improvements in teacher preparation programs, and to contribute to the betterment of working conditions at school sites.

Additional studies

This study was conducted over a period of one year. The findings concerning retention of the new teachers are inconclusive. It is recommended, therefore, that continued long-term research be done to study the questions of retention/attrition of the second-career teachers. Yearly follow-up with the participants in this study would provide more meaningful data.

The classroom observations of second-career teachers took place during the induction year of teaching. This time period is one which requires that the novice teacher learn many new behaviors. Data was not obtained during this year which would either support or refute the assertion that former industry professionals utilize their prior professional experiences in the classroom to make science and mathematics meaningful to students. It is recommended, therefore, that inquiry be made over a longer period of time and using a larger sample to determine whether and how second-career individuals utilize their former professional experiences in their instructional delivery.

Only three geographical locations were utilized in this study, however the regional differences found among the sites were real and may have implications for further national and cross-region comparisons. It is recommended, therefore, that a larger study of this nature be conducted.

CONCLUSION

Investing in specialized retraining programs is not going to solve the problem of shortages of teachers in the mathematics and science fields. Specialized programs, such as ENCORE, are costly and provide training for very small numbers of students. There are not enough people in these special programs to fill the empty slots in classrooms. The career transition seems to be too hard and the status and pay of teaching appear to be too low to make teaching an attractive second-career alternative.

The expectations that large numbers of soon-to-be separated Chevron employees would enter teaching was not realistic. Other career transition teacher preparation programs have also found real differences between enrollment expectations and realities. This was confirmed by the findings of the 1989 RAND Study. The Mid-Life Career Change to Teaching Science and Mathematics Study has provided some clues as to why the numbers have not been as large as originally anticipated. This report also provided rich data concerning the type of training second-career teachers should have and the working conditions and support they need once on the job to ensure that the novices remain in teaching. However, more information is needed for policymakers, industry, and education. It is recommended, therefore, that further study be made of the following questions:

- Why is the response to career transition teacher preparation programs so small and what does the pool of potential second career teachers in science and mathematics really look like?
- What would it take to attract more of these individuals into teaching?
- Finally, what is a reasonable work load for a first-time teacher?

If schools are to benefit from the second-career teacher, these studies must be conducted and attention must be paid to their findings or a potential pool of talented teachers may be wasted.

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